

On the Total Solar Eclipse of 1878, July 29.

By J. R. Hind, F.R.S.

The following particulars relating to this eclipse may be of interest in anticipation of the appearance of the various ephemerides for the year. They are founded upon the tables of Damoiseau and Carlini, but will afford a pretty close approximation to the actual circumstances of the eclipse. No doubt every possible use will be made of this phenomenon by the astronomers of the United States.

Elements.

G.M.T. of Conjunction in R.A. 1878, July 29, 9^h 22^m 11^s.7

R.A. of Sun and Moon	..	128° 56' 4".5
Hor. Mot. in R.A.	Sun	2 26.7
"	Moon	35 59.3
North Declination	Sun	18 39 3.2
"	Moon	19 18 33.3
Hor. Mot. in Decl.	Sun	— 0 35.9
"	Moon	— 12 9.8
Hor. Parallax	Sun	8.8
"	Moon	59 36.7
Semi-diameter	Sun	15 47.7
"	Moon	16 16.3

The following points will indicate the course of the central eclipse:—

Central beginning	117° 48' E	54° 17' N
	178 55 E	65 57
Sun on Meridian	142 52 W	61 58
	139 0	60 32
	135 50	59 31
	132 29	58 9
	123 31	53 19
	116 43	49 16
	110 26	44 20
	97 7	33 4
	90 49	28 23
	82 29	23 19
Central ending	69 31 W	16 56 N

Special calculations for various points near the line of central eclipse:—

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(1). For 135° 50' W., 59° 31' N., the Sun nearly on the Meridian.

	^h ^m ^s	
Totality begins	0 21 29.7	} Local Mean Time.
„ ends	0 24 35.8	
∴ Duration	3 6.1	
Sun's Altitude	50°	

(2). For Denver, Colorado.

	^h ^m ^s	
Totality begins	3 29 0.3	} Denver M.T.
„ ends	3 31 46.8	
∴ Duration	2 46.5	
Sun's Altitude	42°	

(3). For Havannah, Cuba.

	^h ^m ^s	
Totality begins	5 34 31.8	} Havannah M.T.
„ ends	5 36 25.2	
∴ Duration	1 53.4	
Sun's Altitude	16°	

(4). For Port-au-Prince, Hayti.

	^h ^m ^s	
Totality begins	6 18 46.1	} Port-au-Prince M.T.
„ ends	6 20 10.1	
∴ Duration	1 24.0	
Sun's Altitude	4°	

The greatest duration of totality on the central line will be about 3^m 8^s, and the mean semidiameter of the zone of totality in the United States about 51'.

I have carefully examined every part of the above calculation, a very necessary precaution when eclipse-work is undertaken by a single computer.

The Occultation of Uranus on Thursday, March 2, 1871.
By J. Maguire, Esq.

In the last Number of the *Monthly Notices* Captain Wm. Noble states a circumstance which leads him to doubt the accuracy of the time of disappearance of *Uranus*, as shown in page 452 of the *Nautical Almanac*. He says that returning at 14^h 5^m sidereal time to his Equatoreal which had been previously set upon *Uranus*, he found that the planet *had disappeared* two minutes before the predicted time. The times are as follows :—

	^h ^m	^h ^m
	S.T.	M.T.
Disappearance	14 7	15 25
Reappearance.....	15 0	16 19